REMARKS

A petition for extension of time under 37 CFR §1.136(a) is enclosed.

Claims 1-12 are amended and presented for reexamination.

The claims have been rejected under 35 U.S.C. §102(b) and §103(a) based on U.S. Patents 5,334,463 (Tajima et al.), 6,447,939 (Iwasaki), 3,753,780 (Fetterman) and 5,677, 073 (Kawatsu). Reconsideration of the claims is requested inasmuch as the cited references fail to teach or suggest the particular combination of elements forming a fuel cell apparatus as defined in the rejected claims. The claims are particularly deemed allowable for reciting, among other things, a step-up circuit provided between the electricity accumulator (battery) and which is operated when the load requirement exceeds the power supplied by the fuel cell. This results in the electricity accumulator supplying power to the load during high load conditions to prevent over-heating of the fuel cell.

Tajima et al. discloses a fuel cell, a DC/DC converter, and an external load connected in a series circuit. A storage cell is connected in parallel with the fuel cell and DC/DC converter to the external load. The DC/DC converter is used for controlling output from the fuel cell to avoid sudden changes in fuel cell current to allow sufficient time for adjusting the output of the fuel cell. Fuel gas (hydrogen) used for the fuel cell according to Tajima et al. is generated by reforming fuel (methanol and the like) into oxidant gas through a reforming device. The generated oxidant gas is supplied to the fuel cell for power generation. This type of the fuel cell that generates the oxidant gas by reforming the fuel is generally called a

reformer type fuel cell. The disadvantage of this reformer type fuel cell is that, when a current required by the external load is changed, it is difficult to change the power generation of the fuel cell to follow since it is difficult to change the generation of the oxidant gas to follow the change in power generation. Therefore, the DC/DC converter is used to restrict rapid changes in the output of the fuel cell.

The present invention differs from Tajima et al. in that the step-up circuit is connected in series with the electricity accumulator to the load and not in series with the fuel cell as in Tajima et al. In the present invention the series circuit of the electricity accumulator and the step-up circuit is connected in parallel with the fuel cell to the load whereas in Tajima et al. the storage cell is connected in parallel with the series circuit of the fuel cell and DC/DC converter. When the current demand of the load increases to require auxiliary current from the electricity accumulator, the step-up circuit in the present invention increases the voltage from the electricity accumulator to the load to supply the auxiliary current and prevent overload of the fuel cell; in contrast, the DC/DC converter of Tajima et al. lowers the voltage to the load. Thus the present invention provides improved response to the power demand of the load compared to Tajima et al. The deficiency of Tajima et al. in responding to load power demand is exaggerated during discharge of the storage cell (electricity accumulator) since the voltage output of a battery is reduced as it discharges; thus in Tajima et al. a partial discharged condition results in less power to the load whereas in the present invention, the step-up circuit readily accounts for the lower battery voltage by providing greater step-up in

voltage. Accordingly the present claims are clearly novel and patentable over the disclosure of Tajima et al.

Iwasaki is cited for disclosing a "traveling state detector." However Iwasaki does not employ any step-up circuit and thus does not overcome the deficiency of Tajima et al.

Fetterman is cited for disclosing a diode. Fetterman discloses a fuel cell replenishment control means which can be connected across fuel energy source and which includes filter means 12 with a diode 37 in series with a resistance 34 to the base of a transistor 31. The diode would not prevent any current from passing from a load or battery to the fuel cell and thus is not relevant to claim 3. Further Fetterman does not disclose any step-up circuit and thus does not overcome the deficiency of Tajima et al.

Kawatsu is cited for disclosing solenoid valves controlling gaseous fuel flow to a fuel cell. However like Iwasaki and Fettermzn, Kawatzu does not disclose any step-up circuit and thus does not overcome the deficiency of Tajima et al.

The application is now believed to be in condition for allowance and such favorable action is requested.

Respectfully submitted,

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George A. Loud
Attorney for Applicants
Registration No. 25,814

Lorusso & Loud
3137 Mount Vernon Avenue
Alexandria, Virginia 22305
Telephone: (703) 739-9393